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FAMILY LYCEUM.

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BIOGRAPHY.

JOSEPHINE.

[Continued from the last Lyceum.]

Upon reaching France, Josephine was received by Beauharnais with all his former love and admiration, and we find her once more reinstated in the enjoyment of rank and domestic happiness. So perfect was the reconciliation, that she even adopted his daughter Adele, and afterwards, when empress, married her advantageously.

Political difficulties increasing, Beauharnais rendered himself obnoxious to the leading party by his zeal; in consequence of which he was torn from his family and imprisoned in the Luxembourg, where, with many others of rank and fortune, he was compelled to languish with apprehension and sad foreboding. After repeated solicitations, Josephine obtained an interview with him; but the artless children, by unguarded expressions, were the innocent cause of blasting at once all the hopes raised by this apparent lenity; for their conversation being overheard, they were accused of conspiracy; and only a few weeks elapsed, before Josephine too was carried prisoner to the convent of the Carmelites. When daylight dawned, the poor forsaken children, finding themselves alone and friendless, immediately set out for Fountainbleau, where a sister of Beauharnais resided, and with her they remained.

Josephine, although imprisoned far from her husband—uncertain of his fate—and ignorant of the situation of her helpless children, still appeared cheerful; seemingly forgetful of her own woes in binding up the broken hearts of those around her. Many of the prisoners were inconsolable; but she found among them kindred spirits; and forming themselves into societies for mutual improvement, they sought to beguile the weariness of imprisonment. The only regret she seemed to cherish was, that the four walls of the prison circumscribed her power of doing good. By the kindness of friends, she was able to hold correspondence with her husband, and even to obtain one more interview with him, by their appointing the same day for examination of both. The surprise was mutual, and the meeting affecting beyond description, as each felt conscious that it was the last. Soon after this interview Beauharnais was condemned to death on the guillotine, and died in conscious innocence, after having prepared a letter for Josephine, and purchased a lock of hair of his executioner, to accompany it. The letter not immediately reaching her, her companions benevolently withheld from her the journals, and for two or three days she remained in ignorance of his death; but when it could no longer be concealed, the shock caused her a long fainting fit, from which she recovered only to yield herself to despair.—But by degrees a settled melancholy came over her.

On the same day that Beauharnais' death was made known to her, the unfeeling jailor entered the apartment, and took Josephine's flock-bed, saying he wanted it for another prisoner, adding that Josephine would need it no longer, as she was to be removed to other lodgings, and from thence to the guillotine. Her companions immediately set up loud lamentations, but she assured them that her life would not only be spared, but that she should yet be *Queen of France!* Thus this superstitious belief in the prediction of the witch enabled her to bear these extreme trials with fortitude. At evening a peasant came under the grated window, and with pantomimic gestures gave them to understand that the tyrant Robespierre was dead! But they dared not indulge the belief until the voice of the turnkey was heard in the corridor, and the other prisoners burst into the apartment, to mingle their rejoicings with Josephine and her companions. Thus only two days were between her and the guillotine. Josephine's flock-bed being restored to her, she retired to rest, exclaiming, 'You see I am not guillotined, I shall yet be Queen of France'; and, to use her own expression, her repose that night was the sweetest of her life.

Being now released from prison, she took private lodgings in Paris, and with her children lived in poverty and retirement, being supplied with food from the table of Madame Dumolin, a wealthy and benevolent lady, who daily assembled around her table a large circle of the distressed and desolate. Nor amid these sufferings did Josephine escape the apprehension of greater calamities; for the nobility were still in so much danger, that she was actually obliged to bind her son Eugene apprentice to a carpenter, and this delicate youth was frequently to be seen bending under the weight of a plank, or some other arduous part of the profession. Josephine afterwards succeeded in regaining a part of Beauharnais' property, which freed her from embarrassment, and enabled her to support a degree of elegance suitable to her habits and inclinations.

At this time being considered one of the first ladies of France, she moved in the circle of nobility, and was frequently at the house of Bourrienne. Here she first met Napoleon Bonaparte, who was then a general of the artillery at the age of twenty-six. His appearance was far from prepossessing—reduced by disease to a mere skeleton, and disappointed and chagrined by the treatment of Albette and Salicette. They several times met, and Bonaparte was captivated by the beauty and grace of the young widow. But Josephine received his addresses with indifference; and nothing but the repeated solicitations of her friends, together with a regard for the welfare of her children, finally induced her to accept his proposals. So ardent was his passion, that Josephine remarked, that it resembled delirium. That Josephine did not remain thus indifferent to him, is evident from the attachment she manifested for him in after life, even amid his unkind treatment of her.

In the spring they were married; and in twelve days after, Bonaparte set sail for Italy, leaving his bride in France to await his return. A constant correspondence was kept up between the parties until his return in ten months, when he established himself at Monticello, whither Josephine had repaired, where Bonaparte unmolested enjoyed her society; and she, in her reminiscences, regarded this as the happiest period of her life. While here, they frequently took excursions over the most beautiful parts of Italy. In one of these they landed at one of the southern Isles; and here an incident occurred, which shows, that in the domestic circle, Bonaparte could unbend from the dignified commander to the playful child.—Josephine, with the other ladies, standing under an orange-tree, were engaged in admiring the distant scenery, when Napoleon slily stole into the terrace above, and, by a sudden shake, scattered the delicious fruit upon the party below. The attendant ladies ran away in affright, leaving Josephine unmoved. 'Why, Josephine,' exclaimed her husband, 'you stand fire like one of my veterans.' 'And wherefore should it be otherwise,' was the prompt reply. 'Am I not the wife of their commander?'

After the General's departure for the Congress of Rorstadt, Josephine remained behind at Milan, but subsequently repaired to Paris, and remained with him until he embarked for the East, when she accompanied him to Toulon, and there watched the *L'Orient* until it was no longer visible, when, desolate and dejected, she repaired to Plombierres, intending to remain there until the fulfilment of a promise which she had wrung from Napoleon, of sending a frigate to convey her to him. An accident however prevented her from pursuing this arrangement, as the wounds she received by the fall of a balcony on which she was standing, compelled her to prolong her stay at Plombierres.

During his absence, which was long, rumors and feigned reports, unfavorable to Josephine's character, were constantly whispered to him by her secret enemies, which so far influenced him, that when she hastened in the warmth of her affectionate attachment to welcome his return, he pushed her from him in anger, and ordered her instantly to retire to Malmaison, (a country residence.)—She left the apartment, and soon after was seen passing out in tears. Her children followed her; but Bonaparte, says De Mesmes, had not perhaps been prepared for so dignified and silent an acquiescence; nor are we entitled to refuse credit to his own assertion on this occasion, 'my heart was not formed to witness tears without emotion.' He followed, and brought back Eugene her son, upon which the two ladies immediately returned to their chamber, and remained without any communication whatever with Bonaparte. Two days having elapsed, he could continue estranged no longer, and entered the apartment of Josephine. Hortense, her daughter, stood partially shielded from observation by the drapery of the window, while the distressed Josephine sat leaning on a toilet-table, her face buried in both hands, and the tears trickling through her delicate fingers. The letters filled with expressions of the most affectionate regard, which she had received from him while in Egypt, lay open before her. 'Josephine!' said he, after a pause. Josephine looked up; 'Mon ami,' her usual expression of endearment, was timidly uttered. Bonaparte held out his hand, and a perfect reconciliation took place, never afterwards broken by a similar cause.

In May, Napoleon set out for Italy, leaving Josephine at their country-seat at Malmaison, where she spent the interval of his absence in superintending improvements on the grounds, and collecting rare animals, and in bestowing charity, for her benevolence would permit no suffering while she had the power to relieve.

After Bonaparte's triumphant return from Marengo, the most of the time was spent at Malmaison, though his palace at Tuilleries (being now First Consul) was superbly fitted up; and there they seemed to enjoy domestic felicity, being constantly engaged in fetes and evening entertainments, while the mornings were devoted to innocent amusements, into which Napoleon entered with all his heart.

The next important occurrence in the life of Josephine, was the marriage of her daughter Hortense with Louis Bonaparte. As the affections of both parties were previously engaged, some blame naturally attaches itself to Josephine, as the encourager of this union, unless a desire of making sure of at least one sincere supporter in the family of her husband, in some degree atones for it.

Several months seem now to have elapsed without any circumstance of particular interest happening. Their leisure was spent chiefly in short journies through different parts of France. In one of these excursions, Napoleon, who fancied himself an expert coachman, compelled Cæsar to resign the coach-box in his favor. The antic bays immediately set off at full speed, and running against one of the pillars of the gateway, overset the coach with a terrible crash.—Fortunately no material injury was done; and when recounting the particulars afterwards, Josephine turned to Napoleon, and laughingly exclaimed, 'Mon ami, you must 'render unto Cæsar the things that are Cæsar's'; 'let him keep the whip—each to his vocation.'

[To be continued.]

COLUMBUS.

Christopher Columbus, Colombo, or Colon, one of those men who form an era in the history of mankind, was a native of Italy; and since his name has become famous, different places have contended for the honor of his birth. After comparing their claims, the most probable result is, that his family, originally from Pradello in the Placentine, settled in the Genoese dominions, in some part of which Christopher was born, about the year 1447. His father was said by some to have been a weaver, by others a bargeman. Humble as was his condition, he nevertheless sent his son to a school, where he acquired the rudiments of the Latin language, together with some knowledge of geometry, cosmography, and astronomy, sciences for which he shewed an early predilection. He went to sea at the age of 14; his first voyages were to those ports in the Mediterranean frequented by the Genoese; after which he took a voyage to Iceland, and proceeding still farther north, advanced several degrees within the polar circle. After this, Columbus entered into the service of a famous sea-captain of his own name and family. This man commanded a small squadron, fitted out at his own expense; and by cruizing, sometimes against the Mahometans, and sometimes against the Venetians, the rivals of his country in trade, had acquired both wealth and reputation. With him Columbus continued for several years, no less distinguished for his courage than his experience as a sailor. At length, in an obstinate engagement off the coast of Portugal, with some Venetian caravans returning richly laden from the Low Countries, the vessel on board which he served took fire, together with one of the enemy's ships to which it was fast grappled. Columbus threw himself into the sea; laid hold of a floating oar, and by the support of it, and his dexterity in swimming, he reached the shore, though about two leagues distant. After this disaster, Columbus repaired to Lisbon, where he married a daughter of Bartholomew Perestrello, one of the captains employed by Prince Henry in his early navigations, and who had discovered and planted the islands of Porto Santo and Madeira. Having got possession of the journals and charts of that experienced navigator, Columbus was seized with an irresistible desire of visiting unknown countries. To indulge it, he made a voyage to Madeira, and continued for several years to trade with that island, the Canaries, Azores, the settlements in Guinea, and all the other settlements which the Portuguese had discovered on the continent of Africa. By the experience acquired in such a number of voyages, Columbus was become one of the most skilful navigators in Europe. At this time, the great object of discovery was a passage by sea to the East Indies. This was attempted, and at last accomplished by the Portuguese, by doubling the Cape of Good Hope. The danger and tediousness of the passage, however, supposing it to be really accomplished, which as yet it was not, set Columbus on considering whether a shorter or more direct passage to these regions might be found out; and, after a long consideration, he became thoroughly convinced, that, by sailing across the Atlantic ocean, directly towards the west, new countries, which probably formed a part of the vast continent of India, must infallibly be discovered. His conjectures were confirmed by the observations of modern navigators. A Portuguese pilot having stretched farther to the west than usual, took up a piece of timber, artificially carved, floating upon the sea; and as it was driven towards him by a westerly wind, he concluded that it came from some unknown land situated in that quarter. Columbus's brother-in-law had found to the west of the Madeira isles a piece of timber fashioned in the same manner, and brought by the same wind; and had seen also canes of an enormous size floating upon the waves, which resembled those described by Ptolemy, as productions peculiar to the East Indies. After a course of westerly winds, trees torn up by the roots were often driven upon the coast of the Azores; and at one time the dead bodies of two men, with singular features, which resembled neither the inhabitants of Europe nor Africa, were cast ashore there. Even the mistakes of ancient geographers, as to the immense extent of India, as well as various other reasons, contributed to persuade Columbus, that the shortest and most direct course to the remote regions of the east, was by sailing due west. He presented his plans to the Genoese, and afterwards to the king of Portugal; but instead of patronage, he met in both applications with coldness. In Spain, Ferdinand and Isabella shewed him greater attention; and after many delays, which his zeal successively removed, he was permitted to sail in quest of unknown regions. It was agreed by a treaty with Ferdinand and Isabella, that Columbus should be constituted high admiral in the seas, islands, and continent he should discover, with the same powers and prerogatives that belonged to the high admiral of Castile within the limits of his jurisdiction. He was also appointed viceroy in all those countries to be discovered, and a tenth of the products accruing from their productions and commerce was granted to him forever. All controversies or law-suits with respect to mercantile transactions were to be determined by the sole authority of Columbus, or of judges to be appointed by him. He was also permitted to advance one-eighth part of the expense of the expedition, and of carrying on commerce with the new countries; and was entitled, in return, to an eighth of the profit. But, though the name of Ferdinand was joined with Isabella in the transaction, his distrust of Columbus was still so violent, that he refused to take any part in the enterprise as king of Arragon; and as the whole expense of the expedition was to be defrayed by the crown of Castile, Isabella reserved for her subjects of that kingdom an exclusive right to all the benefits which might accrue from its success.

Having thus obtained the assistance of the court, a squadron of three small vessels was fitted out, victualled for twelve months, and furnished with ninety men. The whole expense did not exceed £4000. Of this small squadron Columbus was appointed admiral.

[To be continued.]

Iron.

Iron, the most abundant and the most useful of all metals, was neither known so early, nor wrought so easily as gold, silver, and copper. Iron is of a bluish white colour; and when polished has a great deal of brilliancy. It has a styptic taste, and emits a smell when rubbed. This metal is easily oxidized. A piece of iron wire, immersed in a jar of oxigen gas, being ignited at one end, will be entirely consumed by the successive combustion of its parts. It requires a very intense heat to fuse it; on which account it can only be brought into the shape of tools and utensils by hammering. This high degree of infusibility would deprive it of the most valuable property of metals, namely, the uniting of smaller masses into one, if it did not possess another singular and advantageous property, which is found in no other metal except platina; namely, that of welding. In a white heat, iron appears as if covered with a kind of varnish; and in this state if two pieces be applied together, they will adhere, and may be perfectly united by forging.

When iron is exposed to the action of moist air or water, it acquires weight by gradual oxidation, and hydrogen gas escapes: this is a very slow operation. But if the stream of water be made to pass through a red-hot gun barrel, or through an ignited copper or glass-tube, containing iron wire, the iron becomes converted into an oxide, while hydrogen gas passes out at the other end of the barrel. By the action of stronger heat this becomes a reddish-brown oxide. Sulphur combines very readily with iron. A mixture of iron filings and flowers of sulphur being moistened, or made into a paste with water, becomes hot, swells, adheres together, breaks, and emits watery vapours of an ehpatic smell. If the mixture be considerable in quantity, as for example, one hundred pounds, it takes fire in twenty or thirty hours, as soon as the aqueous vapours cease. By fusion with iron, sulphur produces a compound of the same nature as the pyrites, and exhibits the same radiated structure when broken. If a bar of iron be heated to whiteness, and then touched with a roll of sulphur, the two substances combine, and drop down together in a fluid state. Phosphorus may be combined with iron by adding it, cut into small pieces, to fine iron wire heated moderately red in a crucible; or by fusing six parts of iron clippings, with six of glacial phosphoric acid, and one of charcoal powder. This phosphuret is magnetic. Iron unites with gold, silver, and platina. When heated to a white heat, and plunged in mercury, it becomes covered with a coating of that metal.

There are a great many varieties of iron, which are distinguished by particular names; but all of them may be reduced under one or other of the three following classes: cast iron; wrought or soft iron; and steel. Cast, or pig iron, is the name of the metal when first extracted from its ores. The ores from which iron is usually obtained are composed of oxide of iron and clay. The object of the manufacturer is to reduce the oxide to the metallic state, and to separate all the clay with which it is combined. These two objects are accomplished at once, by mixing the ore reduced to small pieces with a certain portion of limestone and of charcoal, and subjecting the whole to a very violent heat in furnaces constructed for the purpose. The charcoal absorbs the oxigen of the oxide, flies off in the state of carbonic acid gas, and leaves the iron in the metallic state; the lime combines with the clay, and both together run into fusion, and form a kind of fluid glass; the iron is also melted by the violence of the heat, and being heavier than the glass, falls down, and is collected at the bottom of the furnace. A hole at the lower part of the furnace is now opened, and the iron is allowed to flow out into moulds prepared for its reception.

To convert it into wrought iron, it is put into a furnace, and kept melted, by means of the flame of the combustibles, which is made to play upon its surface. While melted, it is constantly stirred by a workman, that every part of it may be exposed to the air. In about an hour the hottest part of the mass begins to heave and swell, and to emit a lambent blue flame. This continues nearly an hour; and by that time the conversion is completed. As the process advances, the iron gradually acquires more consistency; and at last, notwithstanding the continuance of the heat, it congeals altogether. It is then taken while hot, and hammered violently, by means of a heavy hammer driven by machinery. This not only makes the particles of iron approach nearer each other, but drives away several impurities which would otherwise continue attached to the iron.

If the purest malleable iron be bedded in pounded charcoal, in a covered crucible, and kept for a certain number of hours in a strong red heat, it is found, that by this operation, which is called cementation, the iron has gained a small addition of weight, amounting to about the hundred and fiftieth, or the two-hundredth part, and is remarkably changed in its properties. It is much more brittle and fusible than before. Its surface is commonly blistered when it comes out of the crucible; and it requires to be forged, to bring its parts together into a firm and continuous state. This cemented iron is called steel. It may be welded like bar iron, if it has not been fused, or over-cemented; but its most useful and advantageous property is that of becoming extremely hard when ignited and plunged into cold water.

The usual time required for the cementation of steel is from six to ten hours. If the cementation be continued too long, the steel becomes porous, brittle, of a darker fracture, more fusible, and incapable of being forged or welded. On the contrary, steel cemented with earthly infusible powders, is gradually reduced to the state of forged iron again. The texture of steel is rendered more uniform by fusing it before it is made into bars; this is called cast steel; and is rather more difficultly wrought than common steel, because it is more fusible, and is dispersed under the hammer if heated to a white heat. Iron is one of the most valuable articles of the materia medica. The protoxide acts as a genial attendant and tonic, in all cases of chronic debility not connected with organic congestion or inflammation. It is peculiarly efficacious in chlorosis. It appears that the peroxide and its combinations are almost uniformly irritating, causing heart-burn, febrile heat, and quickness of pulse. Many cholybeate mineral waters contain an exceedingly minute quantity of protocarbonate of iron, and yet exercise an astonishing power in recruiting the exhausted frame. Their virtue appears to be derived simply from the metal being oxidized to a minimum and diffused by the agency of a mild acid through a great body of water, in which state it is rapidly taken up by the lacteals, and speedily imparts a ruddy hue to the wan countenance. These qualities may be imitated exactly, by dissolving 3 grains of sulphate of iron, and 60 of bicarbonate of potash, in a quart of cool water, with agitation in a close vessel.—[*Dictionary of Arts and Sciences.*

Practical Science.

The practical results of the progress of physics, chemistry, and mechanics, are of the most marvellous kind; and to make them all distinct would require a comparison of ancient and modern dates. Ships that were moved by human labor in the ancient world, are transported by the winds; and a piece of steel, touched by the magnet, points out to the mariner his unerring course from the old to the new world; and by the exertions of one man of genius, and by the resources of chemistry, a power which, by the old philosophers, could hardly have been imagined, has been generated and applied to almost all the machinery of active life; the steam engine not only performs the labor of horses, but of man, by combinations which appear almost possessed of intelligence; wagons are moved by it; constructions made; vessels caused to perform voyages in opposition to the wind and tide, and a power placed in human hands which seems almost unlimited. To these novel and still extending improvements may be added others which, though of secondary kind, yet materially affect the comforts of life—the collections from fossil materials, the elements of combustions, and applying them so as to illuminate by a single operation, houses, streets, and even cities. If you look to the results of chemical arts, you will find new substances of the most extraordinary nature applied to various and novel purposes. You will find a few experiments in electricity leading to the marvellous results of disarming the thunder cloud of its terrors, and you will see new instruments created by human ingenuity, possessing the same powers as the electrical organs of living animals. To whatever parts of the vision of modern times you cast your eyes, you will find marks of superiority and improvement; and I wish to impress upon you the conviction, that the results of intellectual labor, or scientific genius, are permanent and incapable of being lost. Monarchs change their plans, governments their objects, a fleet or an army effects its purposes, and then passes away; but a piece of steel touched by a magnet, preserves its character forever, and secures to man the dominion of the trackless ocean. A new period of society may send armies from the shores of the Baltic to those of the Euxine, and the empire of the Mahometan may be broken in pieces by a northern people, and the dominions of the Britons in Asia may share the same fate as that of Tamerlane or Zengiskham; but the steam boat that ascends the Mississippi or the St. Lawrence, will continue to be used, and will carry the civilization of an improved people into the deserts of North America and into the wilds of Canada.—[*Sir Humphrey Davy.*

SENSATION.

Hearing.

The undulations of the atmosphere, excited by the vibrations of sonorous bodies, are collected in the external ear and auditory passage, as in a hearing trumpet, and are conveyed to the membrana tympani, which they cause to vibrate. The effect is transmitted through the small bones to the watery fluid that fills the internal ear, in which the delicate filaments of the auditory nerves float; and by this nerve the sensation is conveyed to the brain. Muscles attached to the small bones of the tympanum have the power of stretching or relaxing the membrane; and probably thereby adapt the organ to various quantities of sound, by diminishing acute, and augmenting the force of grave sounds, as the changes in the pupil of the eye accommodate that organ to a greater or less number of rays, according to the effect they produce.

An entire state of the membrana tympani is not essential to hearing; for the sense remains, where an opening has taken place in that part; yet it is necessary that the tympanum should communicate with the fauces, for an obstruction of the eustachian tube causes deafness.

Vibrations may be transmitted to the auditory nerves through the bones of the head; thus a watch placed between the teeth is heard very distinctly, although the ears are stopped, &c.

Touching.

This has been with some propriety denominated the elementary sense, and all others considered as merely modifications, accommodated to certain properties of bodies. 'Every thing that is not light, sound, odour, or savour, is appreciated by the touch.' This sense resides throughout the whole extent of the nervous system; the peculiar organ, however, of touch, or that by which we come to a kowledge of the qualities of objects, is the cutis, spread over the external surface of the body. In some parts this sense is peculiarly modified; in the skin, for example, covering the apices of the fingers; and in such parts we meet with something resembling the papillæ on the tongue, but, perhaps, not exactly similar, as they are rather constituted of nervous projections, than of glandular cryptæ; they are surrounded by an extremely fine vascular membrane. When the sense of feeling is exercised, these papillæ are supposed to swell and elevate the epidermis, which in itself is totally insensible to all such stimuli as act exclusively on living fibre. The epidermis, like the nails and hair, which last proceed from it, is a mere defence of the body, unorganized, and consequently destitute of excitability.—[*First Lines of Science.*

ABUSES.

Schools.

Thousands have been ruined and millions injured by literary institutions. The very first step in school education, as it is frequently, perhaps generally taken, is probably as striking an instance of violence done to our physical, intellectual, and moral natures, as can be found in the history of mankind. Children a year learning twenty-six objects. It is absolutely monstrous.—Why, many children, when permitted to pursue their own course in learning words and the meaning of words, have been able to speak three languages by the time they were four years old. Many children have been able to speak the English and French languages, and without confounding one with the other, at three years of age. Many can at this moment speak the English and Dutch at that age. In doing that, they must learn several hundred, if not thousand objects—their names, properties, and uses.

And how do they do it? Evidently not by the process the four thousand children in the primary schools in Boston are *compelled* to pursue, and emphatically described by one of their number, who told her grandfather, when he asked her what she did at school, that she 'said A and B, and sat on a bench.' So far as the physical and intellectual powers are concerned, the young Indians roaming in the forest are far more favorably situated to exercise and strengthen them, than a great portion of the children who attend school.

It is true, that the mind and heart are such difficult things to chain and to keep in chains, that they exert their native power in spite of the A and B and the bench. Though they may learn nothing from their book or their teacher, they learn from each other, and in their walks to and from school. But it is to be lamented, that much of what they learn from the first of these sources, is, to be vulgar, or unkind, or profane.

But we shall be asked, would you give up our schools then, and return back into the savage state? We answer, no; but make them better, retain all the blessings we now derive from them, and ten-fold greater and richer blessings, and at the same time avoid the evils arising from their abuses. Retain all the freedom and vigor of action frequently worthy of great admiration and greatly admired in the savage, aided, not cramped, by books, and teachers, and schools.

Whoever will look at the nature and course of exercises and management, to which many children are subjected, from the time they enter a school-room at the age of three or four years, till they cease their school education, must be convinced that their tendency is to cramp, not to invigorate the faculties, either physical, intellectual, or moral. How much are the muscles strengthened by a compelled inaction, six hours a day, upon less than two feet of board?—How much is the intellect strengthened by compelling the child to look at twenty-six unmeaning hieroglyphics, fifteen or twenty minutes in a day, for a year? How much is it strengthened by repeating several hundred words from a spelling-book, without dreaming that any one of them have any meaning? How can the intellect be exercised or strengthened by repeating for three or four years in succession a few lessons from a reading-book, without scarcely getting an idea from the whole during the whole time? And how much is the intellect exercised in writing after a few copies half an hour a day, for three or four years in succession? And how are the moral faculties strengthened by such exercises?

It is an established law of our whole nature, that all the faculties which constitute this nature are strengthened by exercise. The muscles are strengthened by physical action. The intellect is equally strengthened, by observing, comparing, judging, and drawing conclusions; by examining the properties, the laws, the uses of things; by carefully observing and judging respecting men and things. The moral facilities are exercised and strengthened by *acts* of kindness—by *doing* good—by relieving the distressed—by self-sacrifice for the benefit of others; not by precepts. As well might we expect that a lecture on gymnastics would invigorate the muscles, as that a lecture on ethics would strengthen the moral faculties. It is not by *saying* 'be ye warmed and filled,' but by *doing* the things that are needful, that we become benevolent.

The children of a school in Charlestown, who had contributed something for procuring books and apparatus for *each other's* use, were disposed to extend their favors without their circle, and beyond their country; they felt themselves disposed, and found themselves able, to contribute something for the suffering Cape De Verds.

If our moral faculties are by far the most important part of our nature, and they, like the other faculties, can be strengthened only by exercise, it is evident that the management of every school must be radically defective, until it has a regular and established system of *giving*—of contributing, in some way, for the mutual happiness of the pupils—until their *acts* of kindness and benevolence extend beyond their own circle—until they are permitted to *do* something for the relief of distress—until they are taught to feel that *doing* good to their neighbor, calling the whole human family, and even the whole animate creation, their neighbor, is the great and almost the only object for which they were created and for which they live. Can any thing be more evidently true than this last position? and yet where is the school that complies with it? where is the school which does not violate it, and instead of benevolence cultivate selfishness?

Lyceum Seminaries.

Several meetings have already been held, and others are proposed, to consider the self-supporting principle in education, and to devise means to carry it into operation.

Teaching the Alphabet.

While visiting a primary school the other day, we asked the teacher how long her children generally were in learning the alphabet. She replied, that they were frequently a year! but pointing to a little boy, she said, there is a boy who has been but little more than six months, and he knows most all the large letters now! When parents and teachers are informed, that ninety-nine children out of a hundred, of four years old, can learn the alphabet in three weeks, they will be led to inquire what is the radical defect in the mode of teaching in that and many other schools, and how children can learn well in three weeks what they frequently learn but poorly in a year. By turning to the fourteenth number of the Family Lyceum, the radical defect will be seen, viz.: presenting over a hundred different objects to an infantile mind at once, without any meaning or use to one of them. It is evident that such a mass of unmeaning and useless confusion must be too much for any mind, and certainly for the mind of a little child.

ox.

cat.

cow.

dog.

A more rational mode of teaching the alphabet will be seen in the second number of the Lyceum, where the method of commencing with words instead of letters is mentioned. Take for example the word ox, cow, dog, or cat; and if either is associated with a picture of the animal it represents, the word and picture will each convey an idea to the mind of the child, and of course each will be remembered. The child will understand and remember that the picture means ox, and that the letters mean ox. If the letters are then separated, and each presented by itself, each will be learned and distinguished from the other in a few minutes. When the word cow is presented, associated with the picture of the animal, from their being associated, the child will learn almost immediately that both mean the same thing, and that thing is an object with which he is acquainted. He will also see, that one of the characters which compose the word cow, is the same as one in ox, which will of course be recognized. From the simple fact that the mind was constructed for being a receptacle of ideas, and that the compound character, or word cow or ox, conveys an idea, and the letter c or x conveys no idea, the one is received, while the other is rejected; until *forcible attempts*, often repeated, compels the mind to receive it. This is the whole philosophy, and the whole secret, why children learn words faster than they do letters.

In the same order they learn almost every thing else. Take knife for example; children evidently learn that a certain compound thing, or an instrument with different parts, is called knife, before they learn that one of those parts is called the handle, and another the blade. The same is true with nearly every article of furniture in the house, every animal, and every plant which they learn. It may be doubted whether any child in the world ever learned that a certain object was called tree, by first learning that a part of that object was called the roots, another the trunk, others the branches, limbs, twigs, leaves, and flowers, and that these put together were called tree.

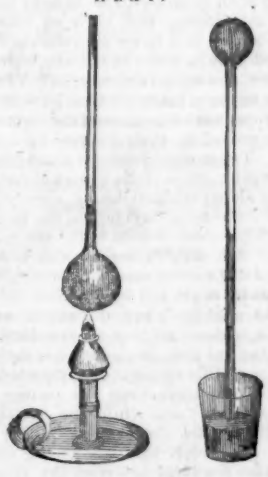
Children, in learning the objects which surround them, take the course which nature dictates; they hence learn rapidly and agreeably. The mode usually adopted for learning the alphabet and many other things in schools, is not merely a want of compliance with the dictates of nature, but it is absolutely at war with nature.

Another mistake usually committed in teaching children the alphabet, was referred to in the second number of the Lyceum; it is, learning the capitals before the small letters. It would undoubtedly be better for a child never to see a capital letter until he had learned all the small ones, and probably not until he had learned to read simple sentences. This will be acknowledged by any one who knows that in books, as they usually occur, the small letters are used from one hundred, to six or eight hundred times where the capitals are used once, and of course if the child can read sentences composed entirely of the small letters, the capitals when used will almost be known of course. This being the case, when a child has been to school six months to learn the capitals, he has to learn another most discouraging lesson, that he has no use for them, and must spend another six in learning some characters that he can use. Is not this too bad? We ask both teachers and parents if this is not too bad?

These views are not original, neither are they theory merely; they have been put into practice, and with uniform success. Several books for children are made something upon this plan, though Mr. Barnum's and Mr. Parkurst's, are more purely so perhaps than any other. A part of the Family Apparatus, or 'Intellectual Toys' for children, are also upon this principle, with the additions that the pictures and words representing objects are placed on bricks, (small blocks) which children use daily for weeks and months, not only without tireing, but with increased interest.

CHEMISTRY.

HEAT.



In our last we referred to one of the great and fundamental laws of heat, which is also among the most universal and important laws in the material universe. We will now show how that law may be proved and explained. The first cut represents an air thermometer and a flask, the one to show the effect of heat upon air, the other upon water, alcohol or any other liquid. If a little water be poured into a tube with a bulb, like that with the bulb at the upper end, and then inverted into a glass of water, the application of the hand to the bulb will so expand the air as to force the water down in the tube. If a lamp, or coal of fire be applied, not only the water, but a portion of the air will be forced out of the tube and rise in bubbles through the water in the glass.

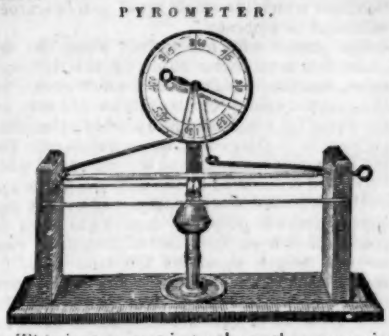
The same experiment may be tried by a Cologne bottle, or even a common vial. Pour a little water into a vial, and after inverting it in a glass of water, place it before the fire, and the heat will so expand the air as to force the water, and a part of that out of the vial. Or if a vial be heated when empty, and then inverted in water, as it cools, the air will be contracted, and the water rise, to fill a part of its place. Experiments to show the expansion of air by heat may be varied almost infinitely.

If a flask, like the one with the bulb down, be partly filled with water, as here represented, and a lamp applied, or heat from any other source, the liquid will rise in the tube. If water and alcohol be both used, separately, it will be seen that the latter will expand nearly twice as much as the former. Though some liquids expand much more than others, air expands much more rapidly, and, to a much greater extent than any liquid. Liquids however are expanded sooner and more than solids.

EOLOPILE.

The instrument here represented, shows both expansion and evaporation. By heating the bulb of the eolopile, the greater part of the air it contains may be forced out, When that is done, if the small end of the instrument be immersed in alcohol or ether, as it cools, the air will contract, and the liquid be forced up to fill its place. Heat the bulb again, and the liquid will be expanded and evaporated, so as to throw a stream of vapor out of the tube, when it may be inflamed by applying another lamp or candle. This experiment shows how liquids are evaporated, and that when evaporated, they are so expanded as to occupy many times more space than when in a liquid state.

PYROMETER.



This instrument is to show the expansion of metals. Though this class of bodies is expanded far less than airs or fluids, by the contrivance here provided, a brass or iron rod may be so much expanded as to give the index to show the expansion a complete revolution; and that even by a small roll of paper lighted and applied to the rod. By a lamp it may be made to revolve two or three times.

The manner by which the expansion of a rod the small part of an inch is made to turn an index twenty or thirty inches, cannot be so well explained by a cut as by the instrument itself. A moment's examination of the construction of the pyrometer will show it operates, to give a most evident demonstration of the expansive power of heat upon metals. All metals are not expanded in an equal degree, or in the same time by the same degree of heat. Brass is expanded more than iron, and silver more than either, by applying the same heat to each.

The experiments here illustrated show that heat expands airs or gases, liquids and solids, varying very much in the degrees of expansion. It is said that the same quantity of air has been made to occupy thirty thousand times as much space at one time as at another. No liquid can probably be made to occupy one tenth part more space at one time than at another, except by changing it into vapor. Metals are expanded far less than liquids.

A few apparent exceptions to this law are observed and mentioned. Water at a given temperature is one. Many pitchers and other vessels have been broken by the expansion of water in becoming colder, or in freezing. But after all, this may not be an exception to the general law. And, perhaps our readers, all of whom have witnessed the experiment, and many of them doubtless have tried it, may give some explanations of it in consistence with the general proposition, that heat expands all bodies. They may possibly have witnessed also, some other exceptions which need explanation. If they should not succeed in explaining this exception or in mentioning others, we will endeavor to aid them in the next number of the Lyceum.

METEOROLOGY OF CONCORD, FOR JANUARY, 1833.

Days.	Grea.	Least.	Mean.	Winds.	Weather.
1	50	44	48	SW	Cy. rn. fr.
2	37	30	32	N	Fair.
3	37	27	33	NNE	Cy. snow.
4	55	34	48	SW	Fair.
5	49	38	43	SW	Cy.
6	49	37	46	SW NW	Cy. fog.
7	30	18	24	NW	Fair.
8	34	13	26	NW SW	Fair.
9	37	26	31	WSW	Cy. snow.
10	35	27	30	WNW	Foggy.
11	15	5	9	NW	Winds.
12	23	5	16	NW SW	Fair.
13	30	12	23	S	Fair.
14	38	6	20	SW NW	Fair.
15	18	4†	12	NW SW	Fair, snw.
16	39	26	32	NW W	Cy rain.
17	11	1†	5	NW SW	Fair.
18	29	10	18	SW W	Fair.
19	6	10†	4†	NW	Fair.
20	29	4	18	SW	Cy.
21	46	30	33	SW NW	Cy.
22	42	25	35	W NW	Cy. fog.
23	41	30	37	W	Cy.
24	36	30	33	E SE	Cy. snow
25	32	20	30	S SE	Cy.
26	36	20	20	NW	Cy. fair.
27	30	20	26	W	Cy. fair.
28	36	14	25	NW	Windy.
29	30	2†	21	W	Cy. fair.
30	40	20	32	W	Snow.
31				NW	Sn. strm.

Warmest day 4th.—Coldest day 19th.
Highest degree 55.—Lowest 10° below zero.
Mean temperature of the month, 26°.

Apprentices' Lyceum.

The Mechanic Apprentices' Library Association, of Boston, is perhaps the purest or most perfect Lyceum in the city. The Resolutions below, which we are glad to use for our columns, furnish a specimen of the spirit and of the plan of the Society. A knowledge of the fact that they have books upon their shelves, as is too often the case, does not satisfy them. Reading those books, does not satisfy them. Hearing lectures, does not satisfy them. They are satisfied with nothing short of doing their own work—of instructing themselves and each other. They hence combine the advantages of a library, a reading-room, a cabinet of Natural History, a debating society, and scientific lectures, given by themselves, not received from others.

Nor have they forgotten the advantages of the attendance of ladies, certainly to their Society, if not to the ladies themselves. Their weekly exercises are of sufficient interest to draw a respectable number of ladies to their meetings.

The young gentlemen composing this Society, are certainly setting an example, worthy of being followed by their older brethren, in the same good cause, both in this city and in all other places.

Mr. Holbrook—The following Circular and Resolves were lately adopted by the Government of the Mechanic Apprentices' Library Association.

CIRCULAR.

The Government of the Mechanic Apprentices' Library Association, desirous of increasing and extending the usefulness of the institution under their charge by all means in their power, have passed the following resolutions which they respectfully publish to the community.

Resolved, that it shall hereafter be the object of this Board, in connection with the other duties assigned them, to undertake the formation of a cabinet for the reception of Minerals, Ancient Coins, all subjects of Natural History, specimens of ingenious workmanship, different kinds of woods, and embracing curiosities from foreign countries.

Resolved, that we invite the members, friends of the institution, and all who feel disposed, to contribute such articles as they may be able, towards the accomplishment of this object.

All such articles, or donations of books, will be thankfully received at the Library room No. 3. Cornhill, on Tuesday or Saturday evenings.

Geo. D. Miles, *Secretary*.

Juvenile Concert.

We are glad to be informed, and to inform those who have a taste for a rational and a dignified entertainment, that the Juvenile Concert, mentioned in our last, will be repeated on Wednesday evening next, at the same place. We esteem it a privilege to speak of occasions of this kind, as affording pleasure of a pure and elevated character, both to children and adults, and as happy illustrations of the power of children, even by occasional social intercourse, to improve each other, and instruct their parents and other friends.

As the appropriation of the avails of the tickets is for a benevolent object, viz.: the benefit of Sabbath Schools, every one who purchases a ticket must feel himself twice rewarded—rewarded in receiving, and rewarded in giving.

Boston Lyceum.

The Lecture on Music, by Lowell Mason, delivered before this Association last week, was received with much interest. Mr. M. is doing much to overthrow many vulgar errors in singing practised in some of our churches, and to establish a correct taste.

Lyceum Buildings.

It is gratifying to find so many of our public journals interesting themselves in the erection of Lyceum buildings, as places of intellectual social resort for all classes and ages, in all our towns and villages throughout the country. We hope the subject will form a rallying point for all the friends of education in all the states.

The Essayist and Young Men's Magazine, for January, contains a still better variety than usual. The Contents are:—Dr. Spurzheim; The Sick Student's Consolation; Literature and Business Young Men; Chitchat; Self-Taught Men; The High Courting the Low; Observer, No. 1; Bachelor's Folly; Literary Remains of John G. C. Brainard; Sketches of Character; Essayist Room; English Periodicals; Literary Notices; Intelligence; Baltimore Auxiliary to the Young Men's Association for the Promotion of Literature and Science; Young Men's Benevolent Society; Boston Lyceum.

The following scrap contains some good advice that often needs to be observed, especially where very benevolent office-seekers abound.

The High courting the Low.

Perchance you 've seen, far out upon the waters—
If not, I 'll tell you of them—white gulls skimming,
Casting an eye at parents, sons and daughters
Of finny tribes, that underneath were swimming.

Perhaps you 've seen one of those gulls, while wending
Over the waves, such meekness to discover,
You thought she had consented, while descending,
To call the son of some old fish her lover.

But what thought you, when the shrewd bird was flying
Upward, to see the fish and gull together?
Thought you, as they to some steep crag were hying,
That all their speed was owing to the weather?

Bethink you then, when Wealth and Honor doff
Their hats, and ask you to their golden dishes;
Gulls without wings have means of flying off,
And have been found, too, mighty fond of fishes.

FRANKLIN, JR.

BOOK OF NATURE.

THE OCEAN.

When the tide begins to flow, it signifies not that the proudest earthly potentates be in the way.—Canute may erect his throne on the beach, and command the sea to approach no farther; but it will be only to proclaim his own impotence; for regardless of the mandate, the waters will press on, and if the monarch persists, will sweep him from the face of the earth. When the ebb has commenced, it is equally vain to think of retarding the reflux; the rolling surges *must* return to the bosom of the ocean from whence they came.

The bed of the ocean, gradually deepening as it recedes from our shores, till it loses itself in the dark unfathomed caves of the deep, renders it not only more commodious for the purposes of navigation, and safe for the inhabitants who dwell on its borders, but it is of singular service in removing to a distance from our shores, those numerous deposits of noxious matter which are daily poured into it, while undergoing the process of purification amongst the sandy particles at the bottom. There the most offensive impurities having subsided into the mud, may be said to be buried in the depths of the sea; but not to remain, for even there a species of worms await their farther decomposition, and the last stage of corruption is made to assume a new form!

The saltness of the sea, besides the important part it bears in the renovating power of the watery element by its saline quality, is also of use in lending its aid to preserve that motion, the beneficial efficacy of which has just been demonstrated; for the saltness of the sea renders its waters less apt to freeze, and in those countries where, in the absence of heat, it is not so necessary otherwise, tends not a little to retard the progress of congelation. This serves only to render the water of the ocean heavier, and consequently of a proper consistency for supporting those numerous burdens which float on its surface.

Among the wonders of the great deep, we may justly reckon those awful phenomena, termed *Waterspouts;* yet these no doubt have their uses.—They are of two kinds; one of which is no other than a thick compressed cloud, reduced to a small space by contrary winds, which blowing at the same time from many corners, give it a cylindric form, and causes the water to fall by its own weight. The quantity of water is so great, and the fall so sudden and precipitate, that if, unfortunately, one of these spouts break on a vessel, it shatters it to pieces, and sinks it in an instant. It is asserted, and possibly with foundation, that these spouts may be broken and destroyed by the commotion which the firing of cannons excite in the air.

The other kind of waterspout is called a typhon, and does not descend from the clouds, but rises up from the sea with great violence. 'These Waterspouts,' Thevenot observes, 'are also very dangerous, for if they fall on a vessel they entangle in the sails so much that sometimes they raise it up, and afterwards let it fall with such violence as to sink it; or, at least, if they do not lift the vessel up, they tear all the sails, or let the water they contain fall on it, which often sinks it to the bottom.' But whatever mischief may be occasioned by Waterspouts, or however terrifying their appearance, we have abundant reason to believe, from their being the production of so wise and good a God, that the *partial* evil they may at times occasion, is nothing in comparison with the good they promote. As the burning torrent, issuing from the top of Etna or Vesuvius, alarms the surrounding inhabitants, and sometimes carries irremediable devastation among their dwellings, yet is absolutely necessary to prevent greater evils; so the terrific Waterspout may act as the most simple and efficacious medium of restoring that equilibrium among the elements, which, if longer prevented, might not only occasion convulsions sufficient to swallow up whole navies, but be attended with the most direful effects upon the dry land. But were it for no other purpose than to add to the grandeur of such a scene as is about to be described, and awaken feelings similar to those experienced by the author of the following sublime sketch, taken in the midst of the Atlantic ocean, these wonderful productions of the varying power of nature, may be said not to have been created in vain.

'One evening,' observes this writer, '(it was a profound calm) we were in the delicious seas which bathe the shores of Virginia; every sail was furled; I was engaged upon the deck, when I heard the bell that summoned the crew to prayers; I hastened to mingle my supplications with those of the companions of my voyage. The officers, with the passengers, were on the quarter; the chaplain, with a book in his hand, stood at a little distance before them; the seamen were scattered at random over the poop; we were all standing, our faces towards the prow of our ship, which was turned to the west. The globe of the sun, whose lustre even then our eyes could scarcely endure, ready to plunge beneath the waves, was discovered through the rigging in the midst of a boundless space. From the motion of the stern, it appeared as if the radiant orb every moment changed its horizon. A few clouds wandered confusedly in the east, where the moon was slowly rising; the rest of the sky was serene; and towards the north a Waterspout, forming a glorious triangle with the luminaries of day and night, glistening with all the colors of the prism, rose out of the sea, like a column of crystal, supporting the vaults of heaven.

'He who had not recognised in this spectacle the beauty of the Deity, had been greatly to be pitied. Religious tears involuntarily flowed from my eyes.

'The consciousness of our insignificance, excited by the spectacle of infinity; our songs resounding to a distance over the silent waves, the night approaching with its dangers; our vessel itself a wonder among so many wonders; a religious crew, penetrated with admiration and with awe; a priest, august in supplicating the Almighty God, inclined over the abyss, with one hand staying the sun at the portal of the west, with the other raising the moon in the eastern hemisphere, and lending, through immensity, an attentive ear to the feeble voice of his creatures; this is a picture which baffles description, and which the whole art of man is scarcely sufficient to embrace.'

No person who has walked along the seashore but must have observed that incessant noise, that continued murmur, which even when the greatest calm prevails, salutes his ear, and the beautiful white edging by which the floating mantle is fringed at its extremities. This soft and placid murmur, and these graceful white curls, are occasioned by the motion of the waves on the extended beach; and trivial as they may appear, serve as perpetual monitors to warn the passenger where the line of boundary commences, which separates the land from the water; and as the rushing noise of the rapid river, and the tremendous roar of the dreadful cataract serve to point out the path of danger to the bewildered traveller, particularly under the cloud of night, these, as well as the luminous appearance of the sea, and the noise of the breakers on the rocks, in regions more remote from the habitations of men, may also be of use to the mariner in the midnight gloom, by enabling him to steer clear of impending dangers. The luminous appearance of the surface of the ocean during the obscurity of the night, has been remarked by navigators, and is a curious phenomenon which has long exercised the sagacity of philosophers; but without inquiring into the cause of this singular phosphoric property of the waters by which they are illuminated, and rendered more visible among breakers, or where the greatest agitation prevails, we must allow that it, as well as the noise which they make in a state of turbulence, has been wisely imparted to the waves of the deep; for, in the words of that elegant writer already quoted, 'How many vessels would perish amid the darkness, were it not for those miraculous beacons, kindled by Providence upon the rocks!'

We have already had occasion to notice that law of nature by which fluids, when put out of order, have an uniform tendency to regain their level, and it is to this law that we must ascribe the facility with which the tract of a ship in the midst of the sea is closed up. But for this, what a rugged and mis-shapen mass must the surface of the ocean long ago have appeared; it is, however, wisely ordered otherwise, and while the plough of the husbandman leaves the deepened furrows open in the stubborn glebe, those occasioned by the humblest bark or lightest skiff in the watery element, as soon as she has passed, are quickly swallowed up.

To a spectator on land, the sea appears to be higher than on the spot on which he stands; this, however, is by no means the case, as is demonstrated by the same experiment by which the globular form of the earth is proved; namely, the sinking of the hull of a ship in the horizon, as she recedes from our view, before the sails and higher parts disappear. This illusion is occasioned by that refraction in the atmosphere, or property of vision, by which objects are made to rise in the landscape in proportion to their distance from us, by which means our horizon is increased and objects longer kept in view, which otherwise must have been extremely limited, and our prospects of short duration.

We labor also under a deception in regard to the color of the sea; for although when viewed from a precipice its waters afford a muddy greenish hue, arising from the depth and position of the eye; when beheld from a shelving beach it assumes the color of the sky; although it is dark and black in the deep abyss, white and foaming in a storm, clouded with the most beautiful color when the rays of the setting sun shine upon it, or puts on the appearance of a beautiful green, when beheld from a boat in a sun-shine day, over a sandy bottom. Yet there can be no doubt but the sea-water is of itself *transparent and colorless*, and that the various appearances it puts on must be entirely owing to accidental causes; and indeed how could it be otherwise, but that the medium of vision to so many living creatures should have remained in such a transparent and untinged state, as to enable them to distinguish each other, and the numerous inanimate objects which are to be found in it by their color.

The bottom of the sea being supposed to resemble the surface of the dry land, these inequalities in its depth which occasion the mariner to be so much on the alert, may easily be accounted for. But if these are the causes of the deceitful shallows and dangerous rocks, it must not be forgotten, that to these also we owe the deep unfathomable gulfs over which the vessel glides in safety, and those numerous islands which adorn and diversify the surface of the ocean.

THE USES OF THE OCEAN.

'Adoring own
The hand Almighty, who its channelled bed
Immeasurable sunk, and poured abroad,
Fenced with eternal mounds, the fluid sphere;
With every wind to waft large commerce on,
Join pole to pole, consociate sever'd worlds,
And link in bonds of intercourse and love
Earth's universal family.'

The Ocean, as we have already observed, is the great reservoir of nature, the mighty source of evaporation, which supplies the earth with fertility, by causing the clouds to drop down fatness. 'It is,' in the words of an elegant admirer of nature's works, 'the capacious cistern of the universe, which admits as into a receptacle, and distributes as a reservoir, whatever waters the whole globe. There is not a fountain that gushes in the unfrequented desert, nor a rivulet that flows in the remotest continent, nor a cloud that swims in the highest regions of the firmament, but is fed by this all-replenishing source.' Thus in the great as well as in the lesser world, a continual circulation is kept up. The waters of the clouds ascend from the sea in vapors; they descend to the earth in showers, and return again to the deep in rivers, after having watered and fertilized the earth. The ocean, instead of being a bar of separation, is the great bond of union among the nations; for look at a map, and behold with admiration how wisely the sea, which the ancients looked upon as an impassable gulf, is disposed and distributed for connecting the remotest realms, and facilitating the intercourse of one nation with another. 'By means of this element we travel farther than birds of the strongest pinion fly, and discover tracts which the vulture's eye has never seen. We make a visit to nations that lie drowned in midnight slumbers when every industrious person on this part of the globe is bestirring himself in all the hurry of business. We cultivate an acquaintance with the sunburnt Negro and shivering Icelander. We cross the flaming line, we penetrate almost to the pole, and wing our way even round the globe.'

The ocean is the great vehicle of commerce, and instead of limiting the industry of man, enlarges his sphere, and excites him to action. There go the ships, which transport the produce of nations from clime to clime, and enables one people to supply their wants from the abundance of another. And here permit us to observe that the arts of ship-building and navigation have indeed been of incalculable benefit to mankind. How astonishing, that such an enormous and heavy a mass as a large ship should be so constructed as to be made to swim in water, with all her crew, stores, and appendages! Yet such masses are not only made to swim, but constructed in such a manner as to move at the lightest breeze, and be guided in their course by a very small helm. These considerations alone might excite our surprise, even if the vessel did no more than coast it along, without losing sight of land; but by the sister art of navigation, she is carried out into the immense depths of the ocean, and made to find her way through pathless tracts, and across a distance of some thousand miles extent; and this by night and by day, foul weather and fair; as well as when the sky is overcast as when it is clear, without the smallest danger of mistaking her port, or missing her desired haven.

Through this element are imported, at a small expense, the productions and rarities of almost every country; and while the workmanship of our artisans, and the produce of our manufacturers are widely diffused among the nations, our tables are furnished from the remotest corners of the globe. We are clothed during summer with the fleeces of the south: and are kept warm in the cold season of winter by the furry mantles of the north. The riches of both Indies are wafted to our shores; and our heavy merchantmen find their way to the remotest regions. And in this place we cannot pass without noticing how different are our modern voyages from those undertaken by the ancients, who, even in the mildest climates, and in seas the least tempestuous, ventured only from their harbors in the summer months; and for this we are indebted to the *loadstone*. It is this faithful and unerring guide which now conducts the pilot with so much certainty in the unbounded ocean, and enables the merchant to transport his goods at such a trifling expense, that a ship of six hundred tons burden, and navigated by betwixt thirty and forty men, can be made to transport as many goods at a time, as would require upwards of twelve hundred horses and a proportionate number of men to manage them! What a difference in point of saving, were it no more than the victuals and provender made use of by such a number of men and horses!

By the invention of navigation, and the discovery of the magnet, we are enabled to correspond with the most uncultivated barbarian in the isles of the sea, and hold converse, as it were, with those who dwell in the uttermost parts of the earth. By means of these, savages the most distant may be humanized and instructed in the knowledge of the arts and sciences, and a way opened for the more universal spread of the gospel.

In short, it is impossible to enumerate the benefits to be derived from this wondrous fluid. As the medium of traffic, and the great depot of so many finny treasures, it gives employment to thousands. It surrounds nations with the most secure barrier of defence; its salubrious breezes refresh and cool the air.—Used as a bath, it strengthens and invigorates the invalid; taken internally as a medicine, its qualities are of the most potent nature; and although it serves as a sink for corruption and all manner of filthiness, such are its purifying and renovating powers, that it not only remains clean, wholesome, and uncontaminated itself, but furnishes us with a large proportion of an useful ingredient to preserve our food from putrefaction!

The bottom of the sea also abounds with a variety of vegetable productions, while its waters are stocked with creatures innumerable, both small and great; a consideration of these, however, we must defer for succeeding chapters and will conclude the present in the words of Bishop Horne:—'The last use I shall mention which we are to make of the sea, is, that which the Holy Spirit himself hath so frequently made of it in the Scriptures, viz. to consider it as an emblem of the world, and of what is passing therein. Under a smiling, deceitful surface, both conceal dangerous rocks and quicksands, on which the unskilful mariner will strike and be lost. Both abound with creatures pursuing and devouring one another; the small and the weak becoming a prey to the great and powerful; while in both there is a grand destroyer, a leviathan, taking his pastime, and seeking the perdition of all.

'In the voyage of life we may set out with a still sea and fair sky; but ere long, cares and sorrows, the storms of affliction, shall overtake us. At God's word, either to punish us or to prove us, from some quarter or another, whence perhaps we least expected it, the wind ariseth and lifteth up the waves. We are carried sometimes up to heaven with hope, sometimes down to the deep with despair.'

QUESTIONS ON LYCEUM No. 25.

Where was the first wife of Napoleon born, and what was the name of her father?

What were her advantages for early education?

With what class of people of an inferior grade did she associate in the early part of her life?

Who was her first husband, and where did he reside?

Was her first marriage happy or unhappy?

Where did she go, when she left her husband?

Did she ever return to him?

At what time and place was Cardinal Wolsey born, and what was the business of his father?

What two kings reigned in England during the life of Wolsey?

What was his influence over Henry VIII., and what office did he obtain?

Was he modest or ostentatious in his deportment?

What caused him to lose the favor of the king?

Was the last part of his life more or less prosperous than the first?

Which is the highest trait of character, integrity or learning?

At what period of life can a sense of integrity be cultivated with the greatest success?

What two sets of organs more than any other sustain the connection between the body and the mind?

What organs convey sensations to the brain?

What was the first step taken by the Quakers to introduce among the Seneca Indians the principles of Christianity?

Did they succeed in introducing among them any improvements in the arts?

Did they become more or less intemperate, as they practised the civilized arts and habits of industry?

What are the two parts of a seed which start at the commencement of germination?

Does the radicle descend into the earth, or rise above its surface?

What are some of the fundamental principles of the Lyceum system?

What are some of the departments of society which can aid each other by adopting the Lyceum principle of Co-operation?

Would persons of the same pursuits be most likely to injure or aid each other, by a system of co-operation?

Would persons of different pursuits, such as farmers and mechanics, assist or injure each other, by adopting more general principles of co-operation?

What two things does the Lyceum promote, which are alike necessary and important to all?

What are some of the objects which might be promoted by a general system of co-operation through the medium of Lyceums in all parts of the country?

What powers and other means are possessed by children, which may enable them in all parts of the country to adopt the Lyceum principle of helping each other?

What objects might be effected by the co-operation of children in all parts of the country?

What was the highest and what the lowest temperature in Boston, during the month of January last?

By what means can the weather and the general state of the atmosphere be compared at different places upon our globe?

How many particles or globules of water have been computed to be in a drop of water which might be suspended upon the point of a pin?

What are some of the principal seas upon the old continent?

Which continent is most remarkable for its lakes?

Who understood the cause of tides best, the ancients or moderns?

What remarkable currents are known in the ocean?

Where are some of the highest tides in the ocean?

In what way does the ocean purify the earth from filth?

How does the ocean aid in producing vegetation upon the earth?

What prevents the ocean from becoming putrid?

What is the cause of whirlpools in the ocean?

Where is the Charybdis?

How do tides preserve the purity of the ocean?

What part of the ocean contains the greatest portion of salt?

How do winds act in preserving the water of the ocean in a healthy state?

Which have the most rivers falling into them, the Caspian sea or the American lakes?

In what way does gravitation keep the ocean in motion, and thus preserve its purity?